

CLAIMS

We claim:

1. A material mixing device, said device comprising:

a housing;

a first port in said housing that receives a first container having first contents therein;

a second port in said housing that receives a second container that contains second contents to be mixed with said first contents to form a material;

a first passageway in said housing for placing said first port and said second port into fluid communication with each other, said passageway comprising a first end having a first needle and a second end having a second needle, said first needle penetrating said first container and said second container penetrating said second container; and

a movable seal in said second container that is displaced during insertion into said second port to expel said second contents under pressure through said passageway and into said second container.

2. The device of Claim 1 wherein said first contents is a lyophilized drug and said second contents is a diluent.

3. The device of Claim 2 wherein said housing comprises interlock means to prevent said second container from being engaged into said second port before said first container is inserted into said first port.

4. The device of Claim 3 wherein first and second ports are adjacent each other in said housing and wherein said interlock means comprises a pivoting bar that blocks said first port whenever said second port is vacant and which pivots out of said second port whenever said first container is engaged with said first port.

5. The device of Claim 1 wherein said first port and said second port are on opposite sides of said housing.

6. The device of Claim 1 wherein said second container also comprises a controlled volume of gas.

7. The device of Claim 6 wherein said gas is air.

8. The device of Claim 6 wherein said device does not need to be shaken to thoroughly mix said first contents and said second contents to form said material.

9. The device of Claim 6 further comprising:

a second passageway in said housing in fluid communication with said first passageway for conveying said material from said second container; and

a hydrophillic membrane in said second passageway, said hydrophillic membrane preventing the passage of said controlled volume of air into said second passageway while permitting said material to pass through.

10. The device of Claim 6 further comprising:

a second passageway in said housing, parallel with said first passageway, for conveying said material from said second container; and

a hydrophillic membrane in said second passageway, said hydrophillic membrane preventing the passage of said controlled volume of air through said second passageway while permitting said material to pass through.

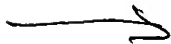
11. A material mixing device, said device comprising:

a housing;

a first port in said housing that receives a first container having first contents therein;

a second port in said housing for receiving a second compressible container having second contents therein;

a first passageway in said housing for placing said first port and said second port into fluid communication with each other; and

 means for compressing said second compressible container to drive out said second contents into said first container to form said material.

12. The device of Claim 11 wherein said passageway comprises a first end having a first needle and a second end having a second needle, said first needle penetrating said first container and said second needle penetrating said second compressible container.

13. The device of Claim 11 wherein said second compressible container comprises a flexible bag and wherein said means for compressing comprises a pair of rotating drums between which said flexible bag passes.

14. The device of Claim 11 wherein said first contents comprises a lyophilized drug and wherein said second contents comprises a diluent.

Year	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
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23. A material mixing device, said device comprising:

a housing;

a first port in said housing that receives a first container having first contents therein;

a second port in said housing that receives a second container that contains second contents to be mixed with said first contents to form a material;

a first passageway in said housing for placing said first port and said second port into fluid communication with each other, said passageway comprising a first end having a first needle and a second end having a second needle, said first needle penetrating said first container and said second needle penetrating said second container;

a second passageway for coupling a pressure source in fluid communication with said first contents; and

a third passageway for conveying said material out of said housing.

24. The device of Claim 23 wherein said pressure source is a bellows.

25. The device of Claim 23 wherein said pressure source is a syringe.

26. The device of Claim 23 wherein said pressure source is a cylinder.

27. The device of Claim 23 wherein said pressure source is a compressed air canister.

28. The device of Claim 23 wherein said pressure source is a chemical gas generator.

29. The device of Claim 23 further comprising a hydrophillic membrane in said third passageway, said hydrophillic membrane preventing the passage of said gas through said third passageway while permitting said material to pass through.

30. The device of Claim 23 wherein said first contents is a diluent.

31. The device of Claim 23 wherein said second content is a lyophilized drug.

32. The device of Claim 23 wherein said second needle is vertically-positioned and is adjustable in height.

33. The device of Claim 23 wherein said third passageway comprises a cavity and piston, said cavity including indicia thereon so that a user can operate said piston to withdraw a desired amount of said material.

34. The device of Claim 26 wherein said housing comprises interlock means to prevent said cylinder from being activated until both said first container and said second container are engaged with said first and second ports, respectively.

35. The device of Claim 34 wherein said interlock means comprises a lip at a piston end of said cylinder that is prevented from moving by an edge in a flexible wall that receives said cylinder, said flexible wall being deflected by the entry of said first and second containers into said respective first and second ports to disengage said lip from said edge.

36. The device of Claim 26 wherein said housing comprises interlock means to prevent said cylinder from re-pressurizing once said gas is injected.

37. The device of Claim 36 wherein said interlock means comprises a lip at a piston end of said cylinder that is trapped under a locking element at a completion end of the cylinder stroke which injects said gas.

38. A material mixing device, said device comprising:

a housing;

a first port in said housing that receives a first container having first contents therein;

a second port in said housing that receives a second container that contains second contents to be mixed with said first contents to form a material;

a third port in said housing that receives an air pressurization system;

a first passageway in said housing for placing said first port and said second port into fluid communication with each other, said first passageway comprising a first end having a first needle and a second end having a second needle, said first needle penetrating said first container and said second needle penetrating said second container; and

a second passageway for coupling said air pressurization in fluid communication with said first contents for forming said material under pressure.

39. The device of Claim 38 wherein said material comprises a low viscosity drug.

40. A material mixing device, said device comprising:

a housing;

a first port in said housing that receives a first container having first contents therein;

a second port in said housing that receives a second container that contains second contents to be mixed with said first contents to form a material;

a passageway in said housing that can be manually switched for placing said first port and said second port into fluid communication with each other, said passageway comprising a first end having a first needle and a second end having a second needle, said first needle penetrating said first container and said second container penetrating said second container; and

a movable seal in said second container that is displaced during insertion into said second port to expel said second contents under pressure through said passageway and into said second container.